THWC
FIRE RATED WINDOWS & DOORS

Technical Guide 01
Understanding Fire-Rated Glazing

Why Fire-Rated Glazing Is Much More Than Just Fire-Resistant Glass

Overview

Fire-rated glazing has become an increasingly common feature in residential, commercial and public buildings, allowing natural light to pass between spaces without compromising fire compartmentation. Although widely specified, it remains one of the most misunderstood elements of passive fire protection.

A common misconception is that fitting fire-resistant glass into a standard frame creates a fire-rated system. In reality, the fire performance depends on the complete glazed assembly. The frame, glass, glazing materials, fixings, seals, retention method and supporting construction are all assessed during fire resistance testing and together determine the final classification.

Understanding this principle is essential for anyone involved in specifying, purchasing or installing fire-rated glazing.

Fire-Rated Glazing Is a Complete System

Fire-rated glazing should always be considered as a tested system rather than a collection of individual components.

A typical assembly includes:

- Fire-rated framing system.
- Fire-resistant glass.
- Glazing gaskets and seals.
- Intumescent components.
- Mechanical fixings.
- Glass retention system.
- Perimeter fire stopping.
- Suitable supporting construction.

Each component has a specific role during a fire. While the glass forms the transparent barrier, the surrounding components ensure it remains securely in place for the required period of fire resistance.

Replacing individual components without supporting technical evidence can affect the performance of the system.

Why Fire-Rated Glazing Is Used

Modern buildings are expected to feel open, bright and welcoming while still restricting the spread of fire and smoke.

Fire-rated glazing makes this possible and is commonly used within:

- Protected corridors.
- Stair enclosures.
- Apartment entrance lobbies.
- Office partitions.
- Schools and universities.
- Hospitals and healthcare buildings.
- Hotels.
- Plant rooms and service areas.

The required level of fire resistance should always be determined by the building's fire strategy and relevant Building Regulations rather than simply selecting the highest available fire rating.

How Fire Performance Is Demonstrated

Fire-rated glazing achieves its classification through recognised fire resistance testing carried out under controlled conditions.

In the UK, classifications are assigned in accordance with BS EN 13501-2, using evidence from standards such as BS EN 1364-1 for glazed screens and partitions, BS EN 1634-1 for doorsets and openable windows, and BS EN 1363-1, which sets out the general principles of fire resistance

testing.

These tests assess the complete assembly rather than individual products. A fire-resistant glass product therefore does not carry the fire classification on its own.

Not Every System Is the Same

Two fire-rated glazing systems may appear almost identical once installed but can be engineered in very different ways.

For example, many aluminium systems rely on concealed steel glazing clips to retain the glass during fire exposure, while timber systems often use different glazing bead arrangements. Both methods can achieve excellent fire performance, but they are tested as different constructions and should never be regarded as interchangeable.

Maximum glass sizes, fixing arrangements, glazing materials and supporting constructions also vary between manufacturers. Compatibility should always be confirmed using appropriate fire test evidence or technical assessment rather than visual appearance.

Good Specification Starts Early

Successful projects rarely begin by choosing a glazing system first.

Instead, establish:

- The required fire classification.
- Whether the application is internal or external.
- The type of supporting construction.
- Any acoustic, thermal or security requirements.
- Opening dimensions and site constraints.

Providing this information early allows suppliers to recommend a suitable tested system and often avoids unnecessary redesign later in the project.

Installation Matters

Even the highest-performing glazing system can only achieve its intended fire performance if it is installed correctly.

Manufacturers publish installation guidance based on the details used during fire testing, covering items such as fixing centres, glazing methods, edge cover, perimeter sealing and compatible supporting construction.

During refurbishment projects it is not unusual to find replacement glazing installed using alternative sealants, missing components or substitute fixings because they appeared to be suitable. While often well intentioned, these changes may fall outside the available fire test evidence.

Following the manufacturer's installation guidance and seeking technical advice before making site changes helps maintain confidence in the completed installation.

In Practice

One of the most common enquiries received by specialist suppliers is whether a broken pane of fire-resistant glass can simply be replaced.

The answer depends on the system.

Although the replacement glass may appear identical, the glazing materials, retention components and installation method should also be compatible with the original tested construction. Obtaining technical advice before ordering replacement materials is usually the safest approach.

Key Points

- Fire-rated glazing is a complete engineered system rather than simply fire-resistant glass.
- Fire classifications are assigned following recognised fire resistance testing.
- The fire rating relates to the complete tested assembly, not the glass alone.
- Products that look similar should never be assumed to offer the same fire performance.
- Early technical engagement helps avoid specification changes, delays and unnecessary cost.

Relevant Standards

- BS EN 13501-2 – Fire classification of construction products and building elements.
- BS EN 1363-1 – Fire resistance tests – General requirements.
- BS EN 1364-1 – Fire resistance tests for non-loadbearing glazed elements.
- BS EN 1634-1 – Fire resistance tests for doorsets, shutters and openable windows.
- Approved Document B – Fire Safety.